THE INSTITUTE OF PHYSICS
47 BELGRAVE SQUARE, LONDON, S.W.1.

BULLETIN

No. 59 NOVEMBER, 1954

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The Bulletin is not intended for general circulation : your copy should not therefore be passed to a library.

APPOINTMENTS VACANT

The inclusion of particulars of a vacancy must not be taken to imply that the Institute necessarily approves of the terms offered or that might be offered. Candidates should satisfy themselves that these are satisfactory, and they may always refer to the Institute for advice.

Monmouthshire Education Committee Technical College of Monmouthshire, Crumlin

Applications are invited for the following posts available at the above College.

(1) **Assistant lecturer in physics.** Candidates must possess a good honours degree in this subject, and it is desirable that they should have had research and/or industrial and teaching experience. Salary in accordance with the Burnham Technical Scale for Assistants Grade "B."

(2) **Graduate** to teach two of the subjects of physics, chemistry and mathematics, chiefly to the standard of Ordinary National Certificate. Industrial and/or research experience desirable. Facilities for research available to suitably qualified candidate. Salary in accordance with the Burnham Technical Scale for Assistants Grade "A."

Further details and forms of application obtainable from the under-signed must be returned not later than November 1, 1954.

County Hall, Newport, Mon. — C. E. Gittens, Director of Education.

Ministry of Supply require **scientific officers** for **Royal Aircraft Establishment, Farnborough, Hants,** for theoretical and experimental work on flight instruments for high speed aircraft, and investigations into stability and control of aircraft when flown with automatic pilots, etc. Qualifications :—1st or 2nd class honours degree or equivalent in physics, electrical engineering or mathematics. Salary, according to age, research experience, etc., within range £444–£815. Women somewhat less. F.S.S.U. benefits may be available. Application forms from M.L.N.S. Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting A.264/54A. Closing date November 29, 1954.

Large British Oil Company has vacancies for **geophysicists** on its exploration staff. Candidates should have an honours degree in physics with subsidiary mathematics and/or geology, but candidates with a general degree will be considered. The work involves delineation of underground rock structure by seismic, gravitational and magnetic techniques and offers considerable scope for men with initiative who are prepared to travel and to work abroad. Normal leave is four months after two years' foreign service.

When conditions permit, facilities are afforded for married men to have their families with them on foreign tours.

Basic salary is commensurate with age and experience, commencing at £820 for young, inexperienced graduates. Appropriate allowances are paid whilst on foreign service. Generous pension scheme.

Applications quoting F.107, should be addressed to Box 1223, c/o 191 Gresham House, E.C.2.

Joseph Lucas (Gas Turbine Equipment) Ltd., have vacancies for **graduates** in science or engineering for fundamental research in the gas turbine field. These appointments offer exceptional opportunities in an expanding industry. Applications giving details of experience and qualifications to be sent to the Personnel Manager, Joseph Lucas (Gas Turbine Equipment) Ltd., Shaftmoor Lane, Hall Green, Birmingham, 28.

Victoria University College, Wellington, New Zealand.

The Victoria University College Council proposes shortly to appoint a **Professor of Physics,** and now invites applications from suitably qualified persons.

The salary will be £1,592 8s. 0d. per annum rising to £1,792 8s. 0d. per annum by annual increments of £100. The initial salary will be determined according to the qualifications and experience of the appointee.

An allowance is made towards travelling expenses.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 5 Gordon Square, London, W.C.1.

The closing date for the receipt of applications, in New Zealand and London, is 1st December, 1954.

Electronic Tubes Ltd., High Wycombe, Bucks. The research division of this company require two **development engineers** for work on radio valves. Applicants with experience in valve development and production methods preferred but experience with closely related techniques would be favourably considered. H.N.C. or electrical engineering degree desirable, but not essential. Part-time education facilities made available to students, if desired. Superannuated position with good prospects. Salary in accordance with qualifications. Write, giving full details, education, qualifications and experience to the Personnel Manager.

British Rayon Research Association. Vacancies for **physicists.**

The Association has vacancies for four physicists, to undertake research on :—1. Shrinkage and dimensional stability of fabrics (reference P.1); 2. creasing and crease-recovery of fabrics (reference P.2) ; 3. the fatigue of textile fibres (reference P.3) ; 4. fibre assemblies (reference P.4).

Applicants should have good honours degrees, and some research experience, preferably of Ph.D., standing, is desirable. Superannuation under F.S.S.U. Applications, quoting the appropriate reference number, and giving full details and the names of two referees, should be sent to the Secretary, British Rayon Research Association, Heald Green Laboratories, Wythenshawe, Manchester.

A **physicist** with a good degree and research experience is required to work in a section engaged in long term investigations into the physical properties of pulp fibres and the effect of preparatory processes upon them. Initially the work will involve the application of a newly developed technique of electron microscopy but later will probably be largely concerned with classical physics. Experience of electron microscopy would be an advantage. The post is permanent and pensionable under F.S.S.U. The salary will be commensurate with qualifications and experience. Apply, giving details of age, education, qualifications and experience, to The Director, The British Paper and Board Industry Research Association, St. Winifred's, Welcomes Road, Kenley, Surrey.

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THE INSTITUTE OF PHYSICS

No. 59 **BULLETIN** November, 1954

NOTICES TO MEMBERS

Graduateship Examination

The Institute's Graduateship examination will be held on June 20 to 24, 1955. Forms of application for admission to the examination may be obtained from the Institute and must be returned not later than December 31, 1954.

Graduateship Examination : General Education Paper

Candidates for the Graduateship examination of the Institute who do not already possess examination qualifications satisfying the Institute's regulations relating to general education are required to take the General Education paper of the Institute's examination. The Board has now agreed that this paper may be taken by students who are aiming to obtain Graduateship ultimately, at any stage of their course. This decision has been made in response to suggestions put forward by colleges preparing candidates for Ordinary and Higher National Certificates in Applied Physics that it would be helpful if students could satisfy this requirement in the early stages of the courses for these certificates. Candidates who satisfy the examiner in this General Education paper will then be eligible to become Student members of the Institute if they so wish.

Course of lectures on Precision Measurement

A course of nine lectures with the general title "Precision Measurement" has been arranged jointly by the Institute and the Department of Extra-Mural Studies of the University of London. The course will be held in the Institute's House on successive Monday evenings at 6.30 p.m. beginning on January 24. Admission to the lectures will be by ticket only, available from the Institute. Tickets are free of charge to members of any grade of the Institute and 12s. 6d. to non-members. As the accommodation is strictly limited, members and others are asked to take tickets only if they are likely to be able to attend most of the lectures. Application should be made as soon as possible ; tickets will be issued in the order of receipt of applications.

The details of the lectures are :—

1. Basic Measurement of Length and Mass ... 24 January
   H. Barrell, D.Sc., A.R.C.S., D.I.C., F.Inst.P.
   (*National Physical Laboratory*)
2. Measurement of Time ... ... 31 January
   H. M. Smith, B.Sc., M.I.E.E., F.Inst.P.
   (*Royal Greenwich Observatory, Abinger Common*)
3. Engineering Dimensional Metrology ... ... 7 February
   J. C. Evans, B.Sc., Ph.D.
   (*National Physical Laboratory*)
4. Electrical Measurements ... ... 14 February
   L. Hartshorn, D.Sc., A.R.C.S., D.I.C., M.I.E.E.
   (*National Physical Laboratory*)
5. Measurement of Temperature ... ... 21 February
   J. A. Hall, B.Sc., A.R.C.S., D.I.C., F.Inst.P.
   (*National Physical Laboratory*)
6. Radiological Measurements ... ... 28 February
   B. Wheeler Robinson, M.A., Ph.D.
   (*National Physical Laboratory*)
7. Measurement of Light and Colour ... ... 7 March
   W. S. Stiles, O.B.E., D.Sc.
   (*National Physical Laboratory*)
8. Measurement of Astronomical Distances ... 14 March
   A. Hunter, Ph.D., F.R.A.S.
   (*Royal Observatory, Greenwich*)
9. Precision Measurement of Selected Physical Properties of Chemicals ... ... 21 March
   R. Handley
   (*Chemical Research Laboratory, Teddington*)

Publications of the Institution of Electrical Engineers

The Council of the Institution of Electrical Engineers have decided to effect certain improvements and changes in the *Journal* and in the *Proceedings*.

The modifications, which will come into force in January 1955, are as follows : In place of the present *Journal* (which has hitherto been available only to members of the Institution) and Part I (General) of the *Proceedings*, there will be only one general publication, in the form of the improved *Journal* of The Institution. This will be designed to be of interest not only to members but also to non-members who

can now subscribe in the same way as for the *Proceedings*. It will still be called the *Journal* and will appear monthly, but in a more attractive form.

Part I of the *Proceedings* will be discontinued at the end of 1954, and thereafter the *Proceedings* will be divided into three Parts only : Part A " *Power Engineering* " (issued in alternate months—February, April, etc.). This will resemble the present Part II, but the only Measurements papers it will contain will be those which are of interest to power engineers. Part B " *Radio and Electronic Engineering* " (issued in alternate months—January, March, etc.). This will resemble the present Part III, but will contain Measurements papers on electronics, which at present appear in Part II. Part C " *Monographs* " (issued twice a year—in March and September). This will be a continuation of the present Part IV, and will contain Monographs, as before.

The *Journal* and the three Parts of the *Proceedings* will be available to members of all grades of the Institute of Physics at half the published rates as follows :—

	Published rate (*per annum*)	*Reduced rate to members of The Institute of Physics* (*per annum*)
Journal	£1 5s. 0d.	12s. 6d.
Proceedings—Part A	£1 15s. 0d.	17s. 6d.
Proceedings—Part B	£1 15s. 0d.	17s. 6d.
Proceedings—Part C	15s. 0d.	7s. 0d.
Journal and all three Parts of the *Proceedings*	£5 0s. 0d.	£2 10s. 0d.

Forms of application for these publications may be obtained from the Secretary of the Institute.

Journal Supplements

Members and retail subscribers who take the *British Journal of Applied Physics* will already have received with the October issue a copy of supplement No. 3 containing the proceedings of the Conference on the Physics of Particle Size Analysis which was held in Nottingham in April of this year. Further copies, bound in stiff boards, are available at 35s. 0d. each. The volume of 210 pages contains 37 papers with the summarized discussion upon them.

Supplement No. 4 to the *British Journal of Applied Physics* will be published in January. This will comprise the papers, with edited discussion, presented at the Conference on Luminescence which was held in Cambridge in April last and which was arranged by the

Electronics Group of the Institute. A paper bound copy will be supplied free of charge with the January issue to all members and others who take the *British Journal of Applied Physics*. Copies bound in stiff boards may be purchased at 25s. 0d. each.

North-Eastern Branch: Chairman

Professor W. E. Curtis (*Past President*) has been elected Chairman of the North-Eastern Branch in succession to the late Mr. H. G. Yates, whose sudden death was reported in the October Bulletin.

Society for Visiting Scientists

The Society for Visiting Scientists, 5 Old Burlington Street, W.1., would welcome enquiries from members of the Institute who are interested in joining the Society. An illustrated booklet giving full details of the facilities which the Society offers is available on request from Miss Esther Simpson, the Society's secretary.

REVIEWS OF BOOKS

Textbook of Physics. Edited by R. KRONIG. Translated from the Dutch. (London: Pergamon Press Ltd.). Pp. xiii + 855. Price 70s.

The content of physics is to-day so vast that it might seem impossible to cover the subject adequately, except at a quite elementary level, in a single volume. Moreover, the steadily diminishing significance of the traditional division into compraatively distinct branches raises problems of presentation which are by no means easy to solve. It may be said at once that in the volume under review these difficulties appear to be largely overcome. A fairly advanced standard (somewhere between Pass and Honours B.Sc.) is maintained, the approach being rather more theoretical than is usual in British textbooks at this level. There are twelve sections, contributed by eight authors, each of whom is a recognized authority in his subject, and the editor may be congratulated on the degree of uniformity in treatment which has been achieved. The rationalized Giorgi system of units is used throughout the book, but a very full table of comparison with other systems is given. In addition to the main sections, e.g. those on mechanics, vibrations and waves, electrodynamics, physical optics, thermodynamics and atomic physics, there are sections on electrical instruments, optical instruments and, rather surprisingly, medical physics. None of these, perhaps, would ordinarily find a place in a pure physics text-book, but they include so much of interest and value that one cannot but welcome them. An attractive additional feature is a set of biographical notes on over a hundred physicists of note.

Translation and production are alike excellent, and the price, although high, is certainly not excessive. It is a book which can be confidently recommended to every physicist, and which should be of real value also to workers in related subjects.

W. E. CURTIS.

Electricity and Magnetism. By C. J. SMITH. (London : Edward Arnold (Publishers) Ltd. Pp. vii + 743. Price 45s.

This exhaustive work is intended for students taking the B.Sc., General Honours degree, although its scope is wider, even if its standard is not higher than that strictly required for that degree. Thus students taking Honours in physics will find it suitable for their penultimate year. It can be highly recommended for these purposes, although in common with so many other invaluable modern books, its cost may be prohibitive for most students, although because of its length and its many excellent diagrams this is not unreasonable. May I suggest here that an enquiry might profitably be made into the statistics of privately owned student books ? Is there a critical price above which sales resistance increases rapidly ? My colleagues and I have often discussed this and have wondered, for example, if two books, even on the same subject, would be purchased more often than a single major treatise costing the same.

In the present case the author has omitted electromagnetic theory for reasons of cost ; it would have been possible (but not necessarily desirable for General Honours work) to include this if the lengthy section on alternating currents had been shortened. This section, done most thoroughly, includes the use of the vector method which, in my opinion, is more valuable than the often laboured treatment involving calculus. The latter could largely have been omitted, together with much of the section on electrolytes which is surely of limited interest, although invariably treated by authors of similar books in this necessary incomplete manner.

The various chapters need not be enumerated, since they follow the usual pattern, but it is a pleasure to mention several refreshing and much needed features. The choice of experimental methods is made with unusual originality. Particular examples are Wilson's apparatus for the measurement of the surface density of the earth's charge (p. 139), Campbell's mutual inductance standard (p. 253), the method for measuring surface emissity of a wire (p. 279) and the magnetic potentiometer (p. 430). There are many others, and in my opinion, the value of these sections, often surprisingly up-to-date for a work of this kind, can hardly be exaggerated, since their value as stimulants must be great. Even classical physics can be made to

seem barren and sterile if its modern applications and virility are not brought home to students early in their instruction. In a similar fashion many of the diagrams can be commended for their exceptional interest and clarity.

The treatment of magnetism is unusually competent for an elementary work.

M.K.S. units are not used and indeed the author makes a brief but spirited attack on them in his introduction although he acknowledges their value in the study of electricity (but not in other branches of physics). I have never, unlike some of my electrical engineering friends, felt strongly in this matter, but it is of some importance that it should be resolved if possible, since otherwise it seems likely that many physics books will continue with the older systems in contrast to many excellent electrical engineering texts, which now tend more and more to use M.K.S. units. Confusion may become worse confounded.

In conclusion, it is to be hoped that Dr. Smith or some other experienced and distinguished teacher will some day provide a similar text for final year (special) Honours graduates. A modern comprehensive and reasonably cheap British book of this sort is sorely needed.

The technical production of the present book is of the highest quality.

J. D. CRAGGS.

An Introduction to the Mathematics of Physics. By J. H. AVERY and M. NELKON. (London : William Heinemann) Pp. 178. Price 9s. 6d.

This book meets a long felt requirement of physicists who are approaching the subject from the non-mathematical side—for example, those taking the subject as part of a course for a first medical examination. These candidates realize the inadequacy of a knowledge of Elementary Mathematics up to "O" level standard in the General Certificate of Education immediately they come to do the more advanced work, and it is not alwasy easy to provide a knowledge of the mathematical skills which they need to deal properly with the task confronting them.

Teaching the skills alone without attempting a rigorous approach or consistent method of treatment of the subject may not always be educationally desirable, but it is often unavoidable. This book helps the mathematics teacher to do the former and leaves him free to do as much as he thinks fit of the latter. It deals with the technique of Algebra and Calculus, Trigonometry and Mechanics and from the point of view of practicality no serious criticism can be made. There are perhaps not enough examples in some sections, and one or two

minor omissions in the text—a section on the mathematics needed in Hydrostatics would have been useful for example. Such small omissions, however, detract very little from the book's worth, and it is to be very much welcomed as a useful addition to School and Technical College text-books.

K. SMETHAM.

Atomic Energy and its Application. By J. M. A. LENIHAN. (London : Sir Isaac Pitman and Sons Ltd.) Pp. 258. Price 22s. 6d.

The various applications of atomic energy have been dealt with in a number of books in recent years but most of these were either popular, general accounts, or detailed monographs on special topics. The book by Dr. Lenihan fulfills therefore a useful service by bridging the gap and providing the reader with a modest knowledge of physics, not only with a good and fairly detailed account of the numerous applications of nuclear energy, but also with an explanation of the basic principles on which they are founded. As a hospital physicist the author has naturally put more emphasis on the medical aspects but one might have expected him to be more critical in the selection of the medical topics.

In a subject developing so rapidly it is difficult to keep up to date, but this is no excuse for the author not to provide the latest information. To cite only two examples from a field with which he ought to be familiar : in the discussion of dosage units no mention is made of the rad, and on page 94 the author speaks about a 10 MeV linear accelerator being under construction, although this machine has been working at 8 MeV for many months before the book was published. There is also a certain amount of patchiness and overlap in the material, and evidence of carelessness in proof reading. Thus, Table 17 on page 47 is identical with Table 41 on page 250, and the latter is referred to as Table 39 on page 251 and as Table 30 a few lines later. It is a pity that such structural faults should mar an otherwise good book.

J.R.

NEWS OF MEMBERS

Fellows

E. R. ANDREW has been appointed Professor of Physics in the University College of North Wales, Bangor.

K. F. BOWDEN is now Professor of Oceanography at the University of Liverpool.

E. R. DAVIES has joined the Board of Kodak Ltd.

I. EVANS is now a Scientist I at the Central Research Establishment of the National Coal Board, Isleworth.

M. A. HAQUE is now Deputy Director of Industries (Technical Education and Training), Punjab.

E. A. G. KNOWLES is working in the Technical Division of Ferodo Ltd., Chapel-en-le-Frith, as a statistician.

B. B. RAY is taking up an appointment as Principal of the Orissa School of Engineering, Cuttack.

J. M. RAYNER has been appointed Principal Delegate for Australia at the 10th General Assembly of the International Union of Geodesy and Geophysics in Rome.

R. S. VINCENT has been appointed Chief Engineer of The Telegraph Condenser Co. Ltd., London.

A. J. C. WILSON has been appointed Professor of Physics at the University College of South Wales and Monmouthshire, Cardiff.

Associates

W. H. ALEXANDER is taking up an appointment with Elliott Brothers (London) Ltd., as a Senior Systems Engineer.

B. BIRTWISTLE has been appointed to the Education Department of Metropolitan Vickers Electrical Co. Ltd., Manchester.

R. H. BUTEUX is now a technical officer at Imperial Chemical Industries Ltd., Welwyn Garden City.

E. A. FINLAY is an engineer in the Physics Department of the University, Birmingham.

T. HEDDLE has joined the staff of the South-East London Technical College as an Assistant Lecturer in the Electrical Engineering and Applied Physics Department.

D. MCGILL is now senior physics master at Glasgow Academy.

C. H. SMITH has taken up an appointment as an Assistant Lecturer in Physics at the Medway College of Technology, Chatham.

L. C. SPARK has recently been appointed research physicist with British Celanese Ltd., Derby.

G. STEPHENSON is now working in the department of mathematics at Imperial College of Science and Technology.

D. T. TURNBULL is at the Rutherford College of Technology, Newcastle upon Tyne, as a Lecturer in the Mathematics and Physics Department.

Graduates

R. W. BICKNELL is now employed as a research physicist with the Plessey Co. Ltd., Towcester.

J. S. BUCHANAN is now at the Armament Research Establishment, Sevenoaks.

D. A. CALDER has taken up an appointment with Imperial Chemical Industries Ltd., in the Propulsives Department at the Research Department at Stevenston.

K. C. ELLIS is working at The British Cotton Industry Research Association, Manchester.

J. J. C. MCCABE is now teaching at St. Mary's Technical School, Newcastle upon Tyne.

G. V. MARR has taken up an appointment at the University of Western Ontario, Canada, as a research associate.

G. MILLWOOD is now employed by British Cellophane Ltd., Bridgwater.

R. C. RITCHIE has taken up an appointment with the Dunlop Rubber Co. Ltd., Birmingham.

J. A. ROBSON has taken up an appointment with Pametrada, Wallsend-on-Tyne, as a research engineer.

R. J. S. SHERWIN is now working at the Anglo-Iranian Oil Company as a geophysicist.

R. W. SNELL is now at the Anglo-Iranian Oil Company as a petroleum engineer trainee.

THE REGISTER

ELECTIONS TO MEMBERSHIP

An asterisk (*) indicates transfer from another grade

Fellows

Duncanson, William Eric, Ph.D., D.Sc., Reader in Physics, University College, London.

Freundlich, Herbert Frederick, M.A., Principal Physicist, United Bristol Hospitals, Bristol.

*Jennings, William Alan, M.Sc., Ph.D., Principal Physicist, Royal Northern Hospital, London.

*Littler, Derrik Joseph, B.Sc., A.R.C.S., Principal Scientific Officer, Atomic Energy Research Establishment, Harwell.

Putman, John Laban, M.A., Head of Physics Group, Isotope Division, Atomic Energy Research Establishment, Harwell.

Associates

*Allen, Kenneth Roy, B.Sc., Physicist, Metropolitan-Vickers Electrical Co. Ltd., Manchester.

*Arthur, David Foxall, B.Sc., Research Physicist, British Nylon Spinners, Ltd., Pontypool.

*Foster, William Warwick, B.Sc., Research Officer, Herring Industry Board, Aberdeen.

*Hesketh, Ross Vernon, B.Sc., Ph.D., Temporary Scientific Officer, Falkland Islands Dependencies Survey.

Ingram, George Alexander, B.Sc., Research Physicist, British Thomson-Houston Co. Ltd., Rugby.

Jones, Peter George Edward Fitzgerald, B.Sc., Scientific Staff I, Research Laboratories, The General Electric Co. Ltd., Wembley.

Kimmins, William George, B.Sc., Lecturer in charge of Science Dept., Victoria Institute, Worcester.

*Kiss, Alan Edwin, B.Sc., Lecturer in Physics, Sir John Cass College, London.

*Lee, Robert Marr, B.Sc., Senior Science Master, St. Bede's College, Manchester.

*MacRae, Thomas Perry, M.Sc., Wool Textile Research Council Fellow, Bradford Technical College.

Masoud Anwar, Mian, M.Sc., Lecturer in Physics, Gordon College, Rawalpindi, Punjab, Pakistan.

Morris, Richard Henry, B.Sc., Head of Development Department, W. & J. George and Becker, Ltd., Birmingham.

Neal, William Ewart John, B.Sc., Ph.D., Scientific Officer, Department of Atomic Energy Industrial Group.

*Reeves, Eric Valentine, B.Sc., Physicist, Courtaulds Ltd., Coventry.

Richards, Nancie, B.A., Technical Officer, Wool Industries Research Association, Leeds.

*Roberts, Peter Charles, B.A., Research Physicist, Electrical and Musical Industries Ltd., Ruislip.

*Tattersall, Geoffrey Howarth, M.Sc., Research Physicist, Research Committee for the Cast Stone and Cast Concrete Products Industry, Stoke Poges, Bucks.

*Sims, George Clifford, B.Sc., Headmaster, Eastwood County School, Keighley.

*Wilkinson, Kenneth Herbert, B.Sc., Research Physicist, Research Laboratories, The General Electric Co. Ltd., Wembley.

Wolfenden, Philip Hunter, M.A., Physicist, Henry Simon Ltd., Manchester.

Graduates

*Absalom, Robert Major, Experimental Officer, Department of Atomic Energy.

*Assenheim, Harry Michael, B.Sc., Scientific Staff, Research Laboratories, The General Electric Co. Ltd., Wembley.

Ball, Clifford John, B.A., Research Student, University of Cambridge.

Barron, John, B.Sc., Research Physicist, Westinghouse Brake and Signal Co. Ltd.

Bennett, Christopher John, B.Sc., Vacuum Physicist, Research Laboratories, Marconi Wireless Telegraph Co., Chelmsford.

Boney, Gordon Ronald, B.Sc., Graduate Apprentice, Mullard Radio Vlave Co. Ltd., Mitcham.

Capellaro, David Francesco, M.Sc., D.I.C., Engineer, Vickers-Armstrongs Ltd., Weybridge.

Caw, William Alexander, B.Sc., Research Officer, Division of Physics, Commonwealth Scientific and Industrial Research Organization, Australia.

Ciddor, Philip Emanuel, M.Sc., Technical Officer, Amalgamated Wireless (Australisia) Ltd., Ashfield, Australia.

*Close, Kenneth John, B.Sc., Assistant Master, Physics Department, Tottenham County School.

Davison, Louis, B.Sc., Research Engineer, B.S.A. Group Research Centre, Sheffield.

Foster, Frank, B.Sc., Research Student, Manchester College of Technology.

Gee, Robert Ernest, B.A., Technical Assistant, British Nylon Spinners Ltd., Pontypool.

*Gunning, William John, B.Sc., Technical Assistant, Ferranti Ltd., Manchester.

Harper, Maurice Edward, W. Edwards & Co. (London) Ltd., Crawley.

Henderson, Bremner, B.A., Assistant Technical Officer, Imperial Chemical Industries Ltd., Dumfries.

*Hindley, Tony Kenneth Derrick, B.Sc., Physicist, British Celanese Ltd., Spondon, Derby.

Jackman, Donald, B.Sc., Graduate Apprentice, Mullard Radio Valve Company, Mitcham, Surrey.

*Kirton, Malcolm, B.Sc., Assistant Experimental Officer, Atomic Energy Research Establishment, Harwell.

Lewin, Douglas William, Member of Research Staff, May and Baker Ltd., Dagenham.

Mustard, David Alan, B.Sc., Technical Officer, Division of Electrotechnology, National Standards Laboratory, Commonwealth Scientific and Industrial Research Organization, Sydney.

Odell, Edward Leonard Gordon, B.Sc., Research Student, University of Southampton.

Parker, Roy Percival, B.Sc.

Parmee, John Llewellin, B.Sc., Physicist, British Thomson-Houston Co. Ltd., Rugby.

Pendleton, David James Lane, B.Sc., Engineer, English Electric Valve Company Ltd., Chelmsford.

*Pigg, Ronnie, B.Sc., Technical Assistant, Bristol Aircraft Company Ltd., Filton.

Phillips, John Allan, B.Sc., Research Student, University College, London.

Pringle, Maurice, B.Sc., Technical Assistant, U.K. Atomic Energy Authority, Sellafield, Cumberland.

*Putner, Tony Ian, Research Assistant, W. Edwards & Co. (London), Ltd.

*Rainbird, Allan Francis, B.Sc., Meteorologist, Department of the Interior, Meteorological Branch, New South Wales, Australia.

Rich, John Brian, B.Sc., Assistant Experimental Officer, Diffraction Branch, Atomic Energy Research Establishment, Harwell.

Saunders, Neville Harvey, B.Sc., Research Student, University of Leeds.

*Sayers, John Francis, Laboratory Technician, Northampton Polytechnic, London.

*Shaw, Derrick, B.Sc., Scientific Officer, Midland Coke Research Station, Sheffield.

*Slade, Derek Edward, B.Sc.

Swiatkiewicz, Jan, B.Sc., Physicist, Engineering Industrial Corporation, Dunstable.

*Thomas, Gwynne Meyler, B.Sc., Research Student, University College of Swansea.

Van Ments, Mordecai, B.Sc., Technical Education Officer, Royal Air Force.

Walker, John Francis, B.Sc., Scientific Officer, Ministry of Supply, Seascale, Cumberland.

Whitaker, Alan, B.S.

*Wilkinson, Robert Phillip, B.Sc., Geophysicist, Anglo-Iranian Oil Co. Ltd., London.

*Wood, Raymond Maurice, Assistant Technical Officer, Imperial Chemical Industries Ltd., Birmingham.

*Zarzycki, Janusz, B.Sc., Research Assistant, Borough Polytechnic, London.

E.M.I. Research Laboratories Ltd., Hayes, Middlesex, have vacancies for **graduates** having a good class degree in physics or electrical engineering, for work on the design of valves in the U.H.F. and microwave bands. Some experience is desirable but not essential. Write stating age, qualifications and experience to Personnel Department (RL/11) E.M.I. Ltd., Hayes, Middlesex.

Physicist (assistant)—Progressive position for young graduate at the **Area Laboratory, West Midlands Gas Board, Birmingham,** to assist in the application and development of instruments at Gas Works and in the Laboratory, X-ray analysis, etc.

Commencing salary according to age and experience.

Applications to the Industrial Relations Officer, West Midlands Gas Board, 6 Augustus Road, Edgbaston, Birmingham, 15.

Electrical engineers. A well-known industrial organization has vacancies for electrical engineers. First class men, able and willing to shoulder responsibility are sought and there are excellent opportunities for advancement. Vacancies exist for men with experience in either power distribution or instrumentation. For the latter type of vacancy applications from physicists will be welcomed. Starting salaries in the range £600–£900 p.a. depending upon qualifications and experience. Post graduate training leading to professional qualifications can be arranged and normal salaries will be paid during such training. Candidates should hold an honours degree.

Write, giving full details of age, qualifications and experience quoting Ref. U.8 to Box A.V.71, The Institute of Physics, 47 Belgrave Square, London, S.W.1.

A **graduate** in **physics** or **electrical engineering** is required for research on problems concerned with the measurement and reduction of vibration and noise. Research experience, especially on the noise associated with air flow, would be an advantage. Familiarity with electronic techniques is desirable.

Applicants should be able to carry out investigations largely on their own initiative.

The appointment is permanent and pensionable ; starting salary will be in accordance with qualifications. Applicants must have completed their National Service obligations.

Write giving age, sex, nationality, education and experience to the Personnel Manager, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester 17.

Ilford Ltd. require a **Graduate** in Physics to undertake investigations at Brentwood into testing methods and research into allied problems. Previous experience in research work is not essential. Salary according to age and experience. Apply in writing to Research Director, Ilford Ltd., Ilford, Essex.

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Monmouthshire Education Committee. Technical College of Monmouthshire, Crumlin

Required a **laboratory technician** to take up duties as soon as possible.

Candidates must have had experience as a laboratory assistant or steward and should have a good practical knowledge of one or more of the following crafts :—scientific glass-blowing, carpentry, photographic processing, instrument or apparatus repair, or preparation of metallurgical specimens.

Candidates should hold an appropriate Ordinary National Certificate or City and Guilds Certificate.

Salary £400 × £20 × £15 × £15 to £450 per annum.

Forms of application obtainable from the undersigned to be returned not later than 30th November, 1954.

County Hall, Newport, Mon. — C. E. Gittins, Director of Education.

Glassblower required by a University Research Laboratory, Cambridge. Salary pensionable according to qualifications and experience in range £6 15s. 0d. — £8 12s. 6d. per week. Applications giving age and full particulars of qualifications and experience to Box A.V.70, The Institute of Physics, 47 Belgrave Square, London, S.W.1.

Photographic laboratory. Vacancy exists for experienced person (preferably female) not over 35, to take charge of routine work in photographic, spectrographic and/or radiographic sections in research laboratory in north London area. Excellent working conditions ; responsible position ; good salary in accordance with experience. Apply by letter to :—Personnel Manager, Ref. P., Murex Welding Processes Ltd., Waltham Cross, Herts.

U.K. Atomic Energy Authority. Mathematical Physicists are required by the **Atomic Weapons Research Establishment, Aldermaston, Berks,** to be engaged on work in one of the following fields :—astrophysics, fluid dynamics, nuclear physics or statistics. Applicants should have a first or second class honours degree in mathematics or physics together with some years appropriate post graduate research experience. The salary scale for Senior Scientific Officer is £935–£1090 (male) per annum and Scientific Officer £445–£815 (male) per annum. Starting salary is according to age, qualifications and experience. Houses available within a reasonable period for married officers who live outside the Establishment's transport facilities. Application form from Senior Recruitment Officer, A.W.R.E. Aldermaston, Berks. Quote ref. 283/WGE.

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